National Measurement Office

UK/0126/0128

MI-006

EC type-examination certificate UK/0126/0128

Issued by:

The National Measurement Office
Notified Body Number 0126

In accordance with the requirements of the Measuring Instruments (Automatic Gravimetric Filling Instruments) Regulations 2006 (SI 2006/1258) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 (SI 2006/1270) which implement, in the United Kingdom, Council Directive 2004/22/EC, this EC type-examination certificate has been issued to:

Ishida Europe Ltd
11 Kettles Wood Drive
Woodgate Business Park
Birmingham, B32 3DB
United Kingdom

in respect of a family of automatic gravimetric filling instruments designated the CCW-SE, comprising a weighing controller, a material feed mechanism, and weighing units comprising a load receptor and associated load cell(s) and having the following characteristics:

Reference accuracy class	Ref (1)	
Scale interval, d =	0.2 g	0.5 g
Maximum capacity, Max =	400 g	800 g
Minimum capacity, Min =	3.6 g	8.5 g

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

Issue Date: **10 December 2012**
Valid Until: **09 December 2022**
Reference No: **TS0104/0004**

Signatory: **P R Dixon**
for **Chief Executive**

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UKAS PRODUCT CERTIFICATION
0135

BIS Department for Business Innovation & Skills

Descriptive Annex

1 INTRODUCTION

This family of automatic gravimetric filling instruments, designated the CCW-SE, is designed for dispensing predetermined loads of powdered, granular or liquid materials. The instruments consist of a feeding device, a number of weighing units, and a weighing controller.

Each model is designated the CCW-SE-2nn, with nn the number of weighing units. Figure 1 shows the typical configuration for the CCW-SE-210.

The instruments operate as associative (selective combination) weighers, and derive the most appropriate combination of loads in one or more weighing unit for discharge as a fill so that the target weight selected by the user is achieved.

2 FUNCTIONAL DESCRIPTION

2.1 Mechanical

2.1.1 Main body

The Main Body construction is as shown in Figure 2 and as described in the following table.

No.	Name	Functional description
1	Inlet chute	Product inlet The funnel-shaped inlet chute guides product fed from the infeed equipment onto the centre of the dispersion table.
2	Dispersion table	The dispersion table conveys product from the inlet chute to the radial troughs.
3	Dispersion feeder (DF)	The magnetic coil incorporated in the feeder vibrates the dispersion table. Product flow amount is controlled by means of the weigh sensor which measures the amount of product on the dispersion table.
4	Radial trough	The radial troughs receive vibration from the radial feeders and convey product to the pool hoppers.
5	Radial feeder (RF)	The magnetic coil incorporated in the feeder vibrates the radial trough.
6	Pool hopper (PH)	Each pool hopper receives product fed from the radial troughs above it and holds it temporarily in synchronisation with the product weighing. The pool hoppers open or close according to the weighing operation to feed product into the weigh hoppers.
7	Weigh hopper (WH)	The weigh hoppers measure the weight of product received from the pool hoppers. These hoppers open or close as a result of combination weighing to feed product into the collection chutes.
8	Weigh/drive unit (WDU)	The weigh/drive unit powers the open/close action of the weigh and pool hoppers. It also contains a load cell (see 2.1.2 below) which measures the weight of product in the weigh hoppers.

9	Collection chute	The collection chute receives and collects product discharged from the weigh hoppers and guides the product down into the discharge chute.
10	Discharge chute	The discharge chute receives and collects product discharged from the weigh hoppers and guides the product down into the timing hopper or the packer.
11	Timing hopper (TH) (Optional)	The timing hopper temporarily pools the product from the discharge chute and controls the timing of the discharge to the packer.
12	Timing hopper drive unit (Optional)	The timing hopper drive unit powers the open/close action of the timing hopper.
13	Feeder cover (Optional)	The feeder cover prevents dust from intruding into the dispersion and the radial feeders.
14	Remote control unit (RCU)	The RCU contains the display and keyboard used to operate and monitor the instrument.
15	Printer (Optional)	Prints out setting data, weighing results, and statistical data.
16	Main power switch	Turns on and off the power to the weigher.
17	Drive case	Incorporates the main electrical unit and driving unit.
18	Body	Incorporates PS-0, PS-2, CAL, and/or relay unit.

2.1.2 Weighing units

Each weighing unit comprises a load cell supporting the weigh hopper and associated load transportation mechanism.

The load cell is a load cell type TCL-6L, capacity 6 kg, manufactured by by Ishida Japan.

2.2 Electrical

2.2.1 Weighing controller

The weighing controller comprises an A/D converter, PCBs, a PLC and manages the filling operation.

Printed circuit boards		Reference to schematics	
Name	Type	IC list	Layout drawings
ADC board	P-5541	092-4116-00	092-4115-06
PRE AMP board	P-5527	N/A	N/A
CAM SENSOR board	P-5207	N/A	N/A
DUC board	P-5525	N/A	N/A
DUC Connector board	P-5536	N/A	N/A
FDRV board	P-5424	N/A	N/A
HFDRV board	P-5432	N/A	N/A
PRE-AMP board	P-5527	N/A	N/A
RCU board	P-5433	102-4833-09	
RELAY board	P-5526	N/A	N/A
WCU board	P-5421	102-4832-05	

2.2.2 Remote control unit (RCU, Figure 3)

The RCU (Figure 3) consists of a touch screen, main power switch and printer. It is designed to be hooked and secured by screws onto the instrument, and provides the user interface.

2.3 Devices

The instrument is provided with the following devices:

- Semi-automatic zero-setting device
- Automatic zero-setting device
- Determination of stability of equilibrium
- Determination of optimum combination of loads

2.4 Operation

2.4.1 General

Following power-on, the instrument runs through a display check on the RCU and enters the main menu.

Whenever an error condition is detected, the instrument will stop operation immediately, with the relevant error message shown on the display, until the fault is acknowledged and cleared by the operator.

2.4.2 Automatic operation

The automatic weighing operation is as shown in Figure 4 and as detailed below. This is preceded by the operator selecting a “Preset” which contains a pre-determined target weight value and then pressing the “Start” key.

No.	Process
1	Product is supplied to the inlet chute from the upstream infeed equipment.
2	Product is conveyed from the inlet chute to the dispersion table, and the dispersion table vibrates to convey product onto the radial troughs.
3	The radial troughs vibrate to convey product onto the pool hoppers.
4	The pool hoppers discharge product to the weigh hoppers as required.
5	Product is weighed in the weigh hoppers.
6	Select the weigh hoppers so that the target weight is achieved. Then product is discharged from the selected hoppers.
7	Product is collected in the collection chute and discharged from the discharge chute.
8	If an optional timing hopper is installed, product is discharged on the discharge request from the packer.

Upper and lower tolerance limits are set for each preset. If the weight in the weigh hoppers is such that the final fill value will exceed these tolerances, an error message is given and the fill is not discharged.

2.4.3 Average weight mode

An Average Weight Mode is available at the Site Engineer Level (Level 1). In this mode, a Tolerable Negative Error (TNE) is automatically derived from the next table. The TNE is the acceptable negative error from the target weight (or nominal weight, otherwise known as Qn) selected by the operator.

Nominal weight Qn (g)	TNE (g)
5 ≤ Qn < 50	0.09 x Qn
50 ≤ Qn < 100	4.5
100 ≤ Qn < 200	0.045 x Qn
200 ≤ Qn < 300	9
300 ≤ Qn < 500	0.03 x Qn
500 ≤ Qn < 1000	15
1000 ≤ Qn < 10000	0.015 x Qn

In the Average Weight Mode, the filling operation is fully controlled to meet both of the conditions listed below:

(i) The actual weight shall not be less, on average, than the nominal weight (Qn) predetermined by the operator and marked on the bag/container.

(ii) Any fill below Qn - TNE is not discharged.

3 TECHNICAL DATA

3.1 The technical data for the instruments is as follows:

Power supply	230 VAC / 50 Hz	
Reference accuracy class, Ref(x)	1	
Accuracy Class	Assigned at verification	
Scale interval d =	0.2 g	0.5 g
Maximum capacity	400 g	800 g
Minimum capacity	3.6 g	8.5 g
Minimum Fill	15 g	35 g
Frequency of automatic zero setting	≤ 14 min	≤ 16 min
Average number of loads	4	
Maximum rate of operation	Assigned at verification	
Operating temperature range	-5 °C to + 40 °C	
Climatic environment	Closed, non-condensing	
EM Classification	E1 and E2	

3.2 Drawings and documentation

Designation	Number	Issue
CCW-SE-2** User manual	581-3471	1
Service manual	See User Manual	
Assembly layout and dimensional drawings	583-6648	00
	583-6647	00
Parts list (Individual Machine specific)	See User Manual	
Electrical schematics	380-3673	02
	380-1436	02
Block diagram	See Electrical Schematics	

3.3 Software

The legally relevant software is designated as follows:

Machine Model	RCU Software & Version	WCU Software & Version
CCW-SE-210	S9016	S9014a
CCW-SE-214	S9010b	S9014a
CCW-SE-220	S9016	S9014a

This information can be displayed by accessing the 'program number' page in the maintenance pages of the RCU.

The legally relevant parameters are hard-coded with the exception of the zero-span calibrations which is password-protected. A non-editable counter increments every time a calibration is changed, the counter is designated CALIBRATION COUNT and is displayed at the top of the Zero/Span page in maintenance level.

Note: Min, Max and d may be changed at maintenance level to either set of values in table 3.1 without incrementing the counter.

4 PERIPHERAL DEVICES AND INTERFACES

4.1 Interfaces

The instrument may be fitted with the following protected interface:

- ARCNET (RS-485 hardware with ARCNET protocol)

4.2 Peripheral devices

The instrument may be connected to any peripheral device that has been issued with a parts certificate by a Notified Body responsible for Annex B (MI-006) under Directive 2004/22/EC in any Member State and bears the CE marking of conformity to the relevant directives; or

A peripheral device without a parts certificate may be connected under the following conditions:

- it bears the CE marking for conformity to the EMC Directive;
- it is not capable of transmitting any data or instruction into the weighing instrument, other than to release a printout, checking for correct data transmission or validation;
- it prints weighing results and other data as received from the weighing instrument without any modification or further processing; and
- it complies with the applicable requirements of Directive 2004/22/EC Paragraph 8.1 of Annex I.

4.3 Printer

If a printer is used it shall bear a label marked "FOR MANAGEMENT PURPOSES ONLY".

5 APPROVAL CONDITIONS

The certificate is issued subject to the following conditions:

5.1 Legends and inscriptions

The following legends are durably and legibly marked on a rating plate located on the instrument (Figure 5):

'CE' marking
Supplementary metrology marking
Notified body identification number
Reference accuracy class, Ref(x)
Accuracy class X(x)
Maximum capacity
Rated minimum fill
Scale interval (d)
Serial number
Type designation
Manufacturers mark or name
Certificate number
Information in respect of the conditions of use

5.2 The instrument shall be permanently installed.

5.3 The instrument shall be set to zero at least every 14 or 16 min (via automatic zero-setting).

6 LOCATION OF SEALS AND VERIFICATION MARKS

6.1 The 'CE' mark shall be impossible to remove without damaging it. The rating plate shall be impossible to remove without it being destroyed.

The markings and inscriptions shall fulfil the requirements of Paragraph 9 of Annex I of the Directive 2004/22/EC.

6.2 Components that may not be dismantled or adjusted by the user (load cell connection, calibration jumper) must be secured common serial numbers, a wire and seal solution or a tamper evident label and securing mark. The securing mark may be either:

- a mark of the manufacturer and/or manufacturer's representative, or
- an official mark of a verification officer.

6.3 The Approval Count's value (as described in section 3.3) shall be written on a tamper-evident label on or near the rating plate.

7 ALTERNATIVES

There are currently no authorised alternatives.

8 ILLUSTRATIONS

Figure 1 CCW-SE-210
Figure 2 Main body construction
Figure 3 Remote control unit
Figure 4 Sequence of operation
Figure 5 Rating plate example

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0128	10 December 2012	Type examination certificate first issued.

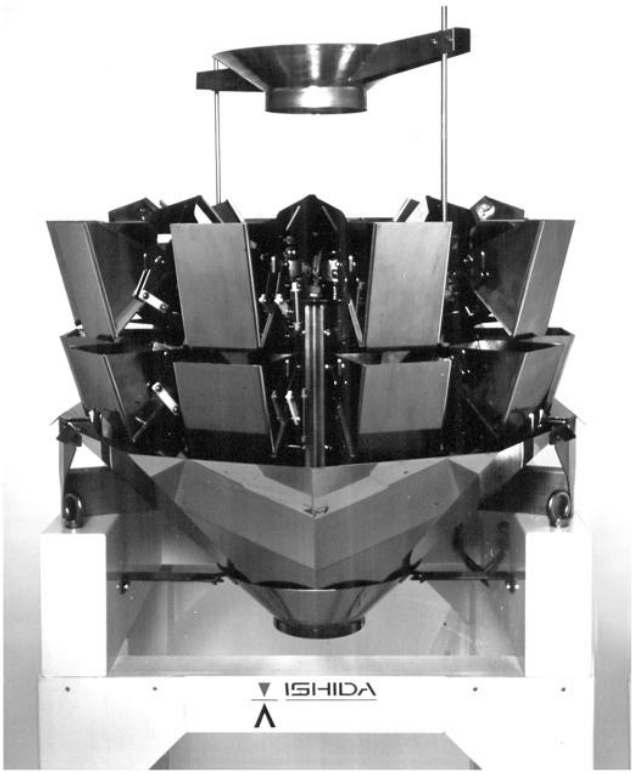

Figure 1 CCW-SE-210

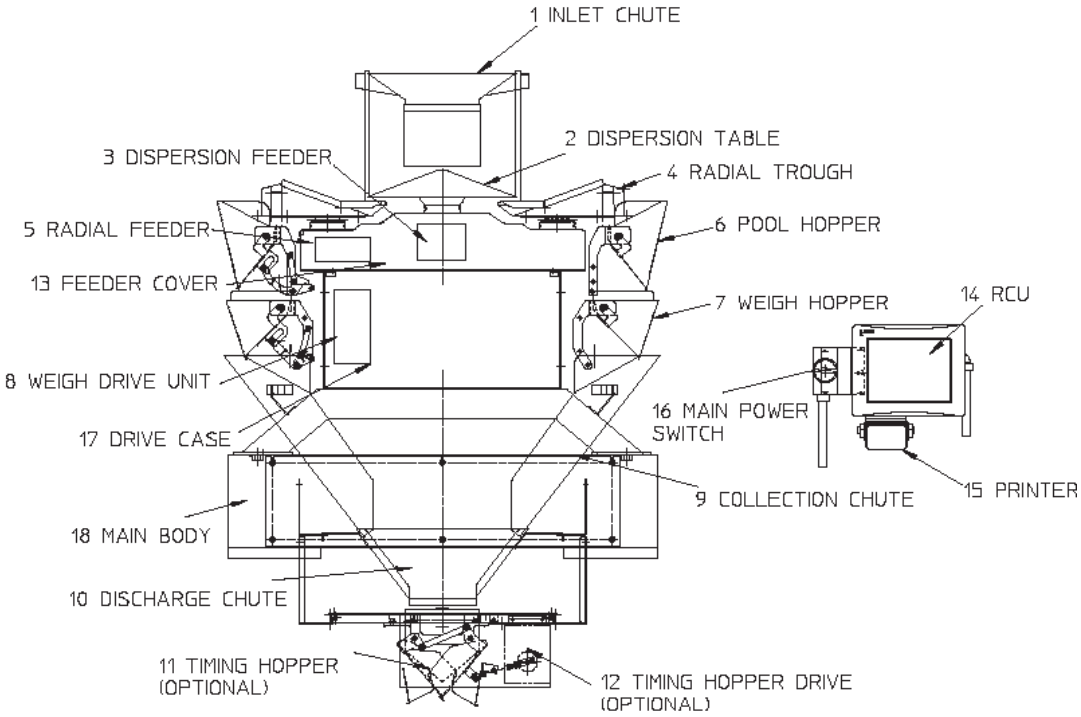

Figure 2 Main body construction

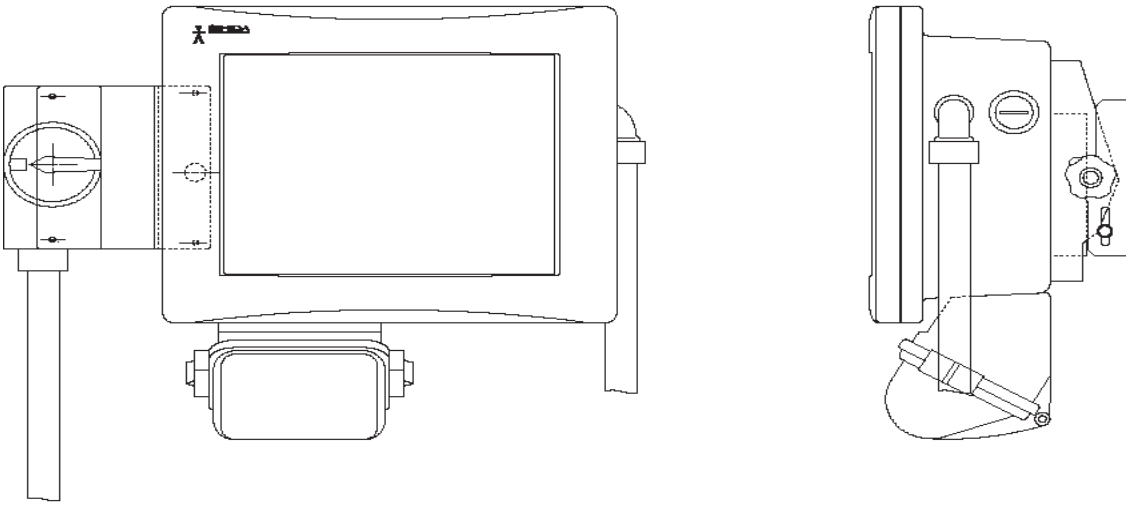

Figure 3 Remote control unit

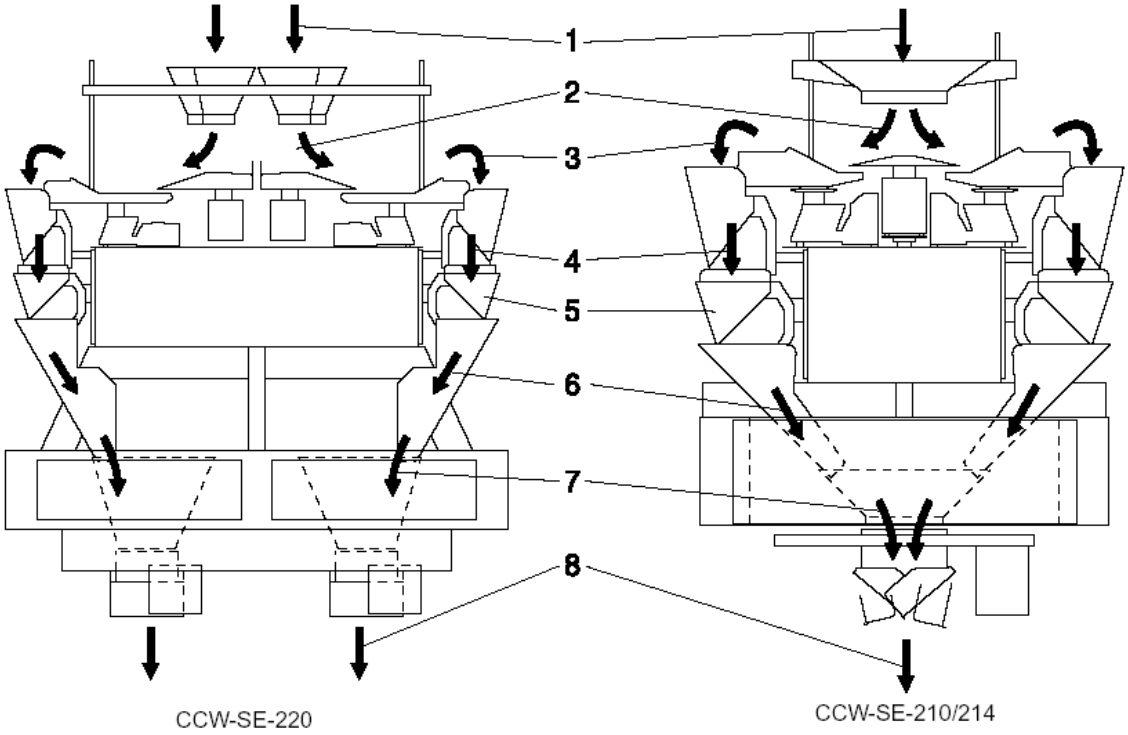

Figure 4 Sequence of operation

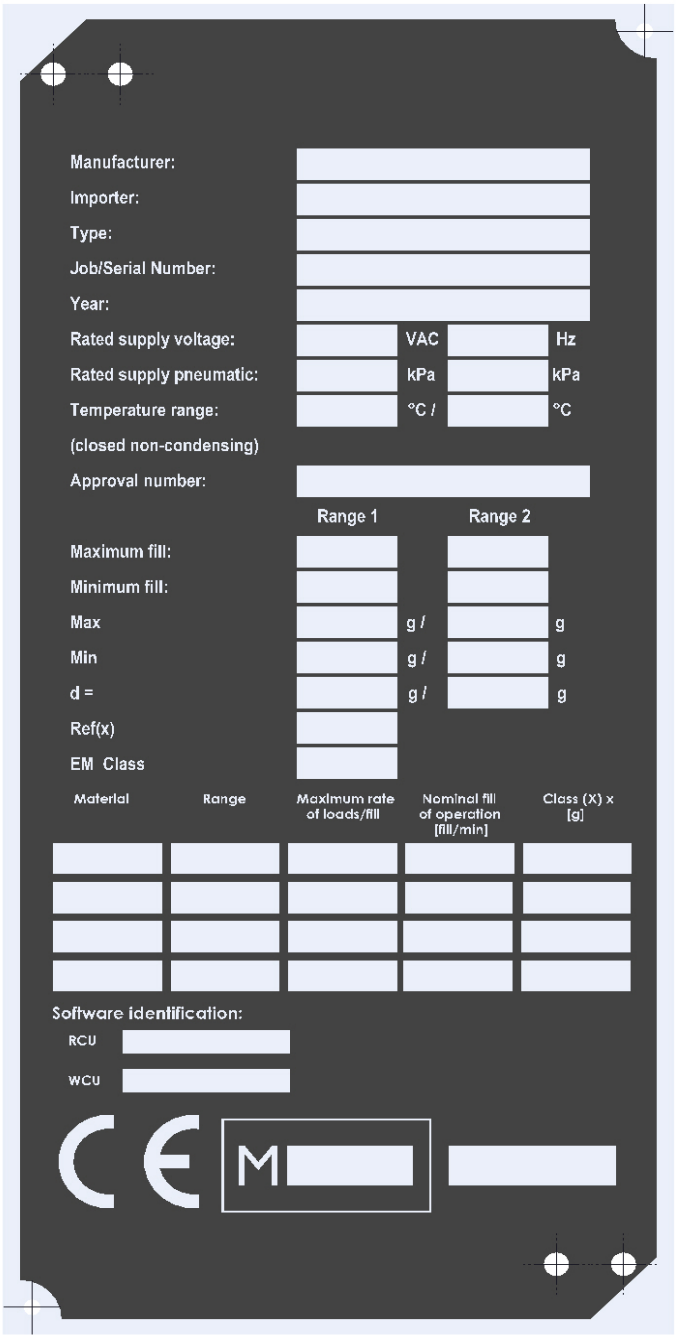

Figure 5 Rating plate example

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